

Space Studies at the Hawaii Institute Geophysics and Planetology (HIGP), Univ. Hawaii

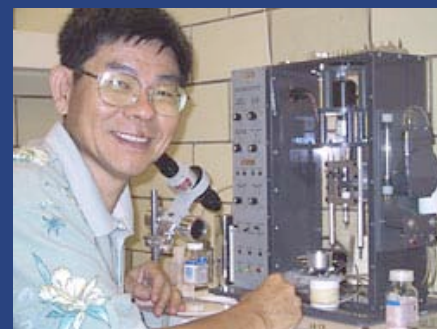
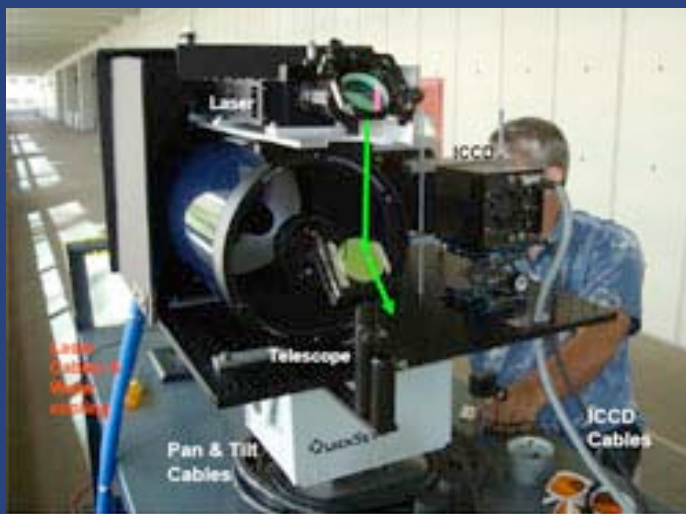
**Dr. Peter J. Mougini-Mark
Director, HIGP**

**(808) 956-8760
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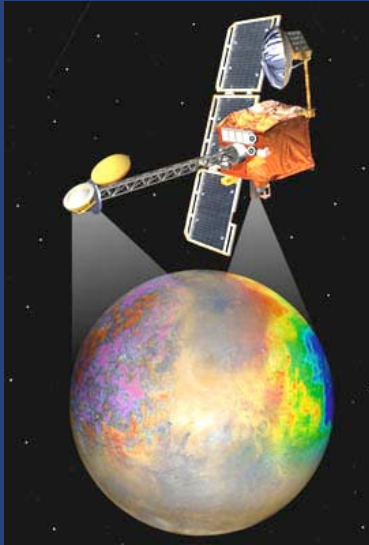
Summary of HIGP

- ▲ 52 Faculty
- ▲ 42 Staff
- ▲ 15 Graduate Students
- ▲ 9 post-docs
- ▲ Currently 80 active planetary/space grants or contracts worth > \$22.8M
- ▲ Total of \$2.4M p.a. support from State (27 FTE for faculty)
- ▲ Support from NSF, NASA, DoD-Navy, DoD-Army, NOAA, JPL, Raytheon, Georgia Inst. Tech., Battelle, ITT, Caterpillar Inc.





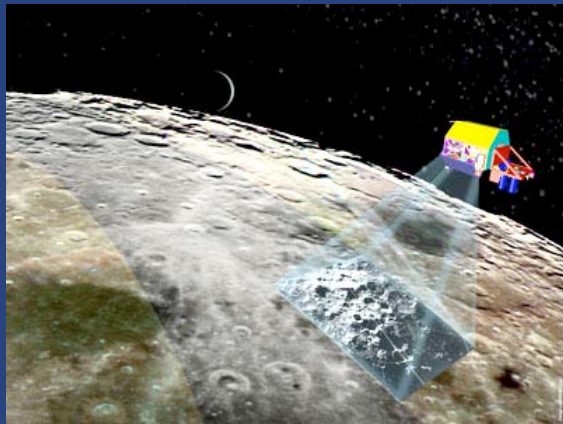
HIGP Team Membership on Current Planetary Missions



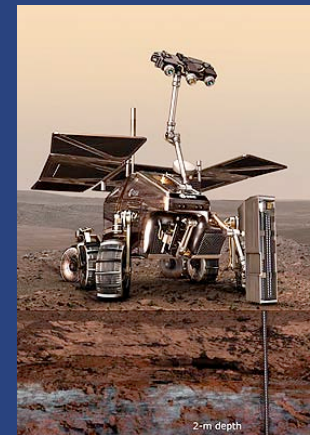
Mars Odyssey



MESSENGER
(Mercury)



Lunar Reconnaissance Orbiter



ExoMars



Hawaii Space Flight Lab



PMRF Launch



Small-satellite design and fabrication



Luke Flynn



X-band data reception



10,000-class clean rooms

GOALS OF HSFL

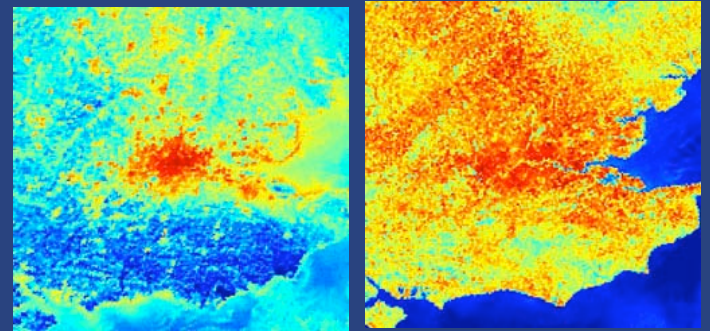
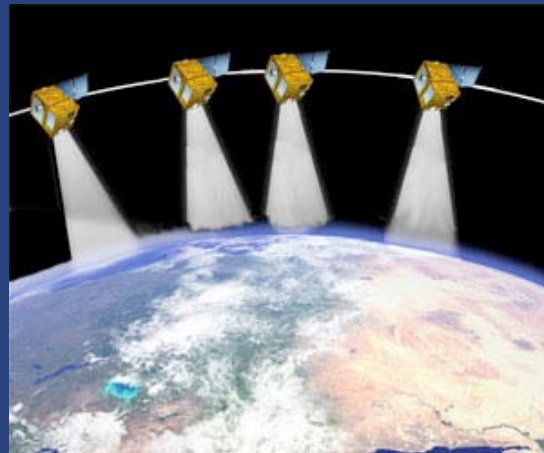
Innovative constellations of
small satellites:

Clusters for multi-parameters
High-temporal coverage



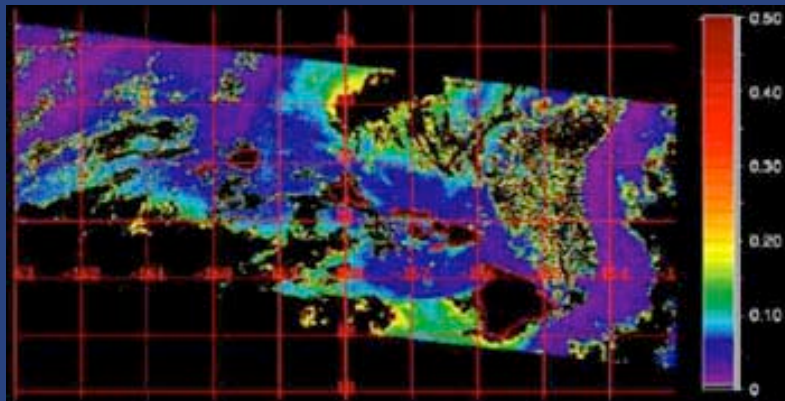
Fly our own
instruments:

Optical Imaging
Aerosols
GPS met



Thermal studies of Earth

Urban areas include ~ 50 % of
the world's population. The
direct contribution of cities to
climate change is small but
urbanization has global
implications and consequences



Ocean optics and color



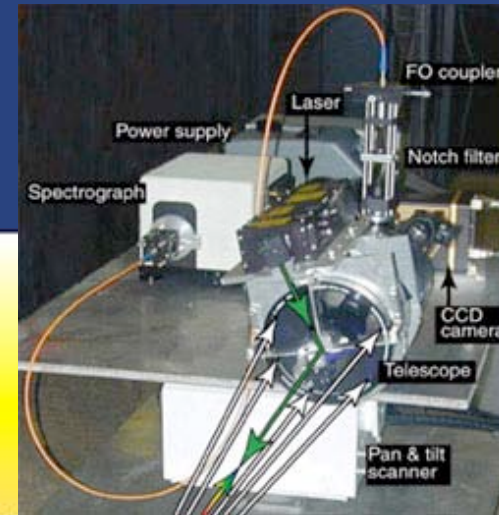
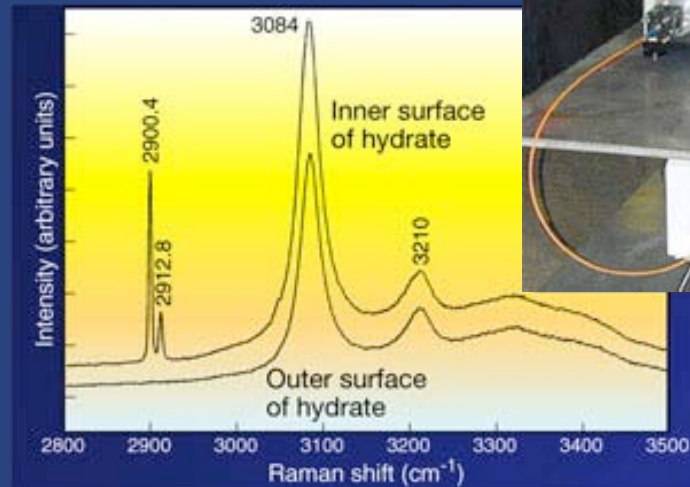
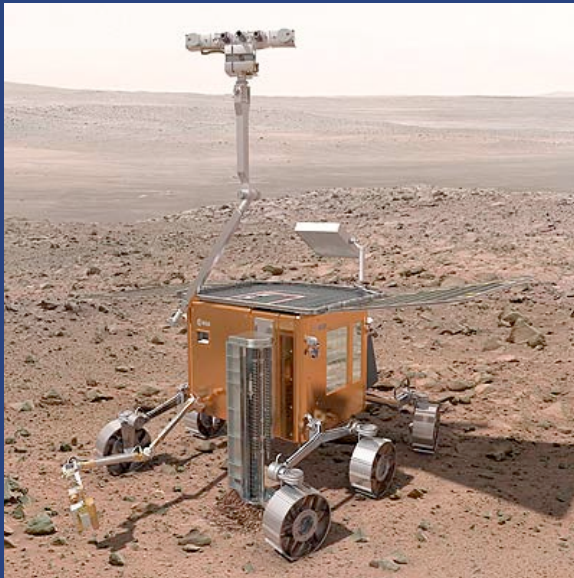
Future UH lunar mission?

Infrared & Raman Technology Development



Shiv
Sharma

ExoMars Mission



Mars sensor and field data



HIGP: Mitigation and Adaptation of Hawaii's Society to Climate Change

IPCC research indicates:

1. Doubled melting rate of Greenland ice sheet,
2. Net melting of the Antarctic ice sheet,
3. Global rise approaching 3.0 mm/yr, twice the rate last century,
4. Continued heating of atmosphere – heating of water column, 1 m rise is now expected during this century.
5. 3°C temperature rise suggests 3-6 m sea-level rise in a century.

1958 Territorial Law included “...[HIG shall conduct] application of research results relevant to Territorial problems.”

To be relevant to the State, HIGP will provide the geophysical/remote sensing leadership to help the State of Hawaii survive the impending crisis due to climate change



Waikiki today



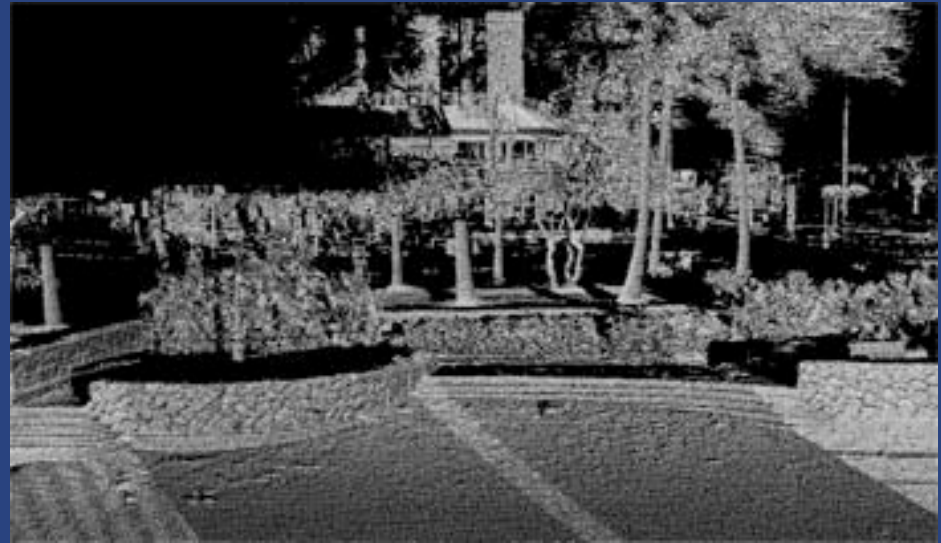
Future Waikiki + 3 feet rise



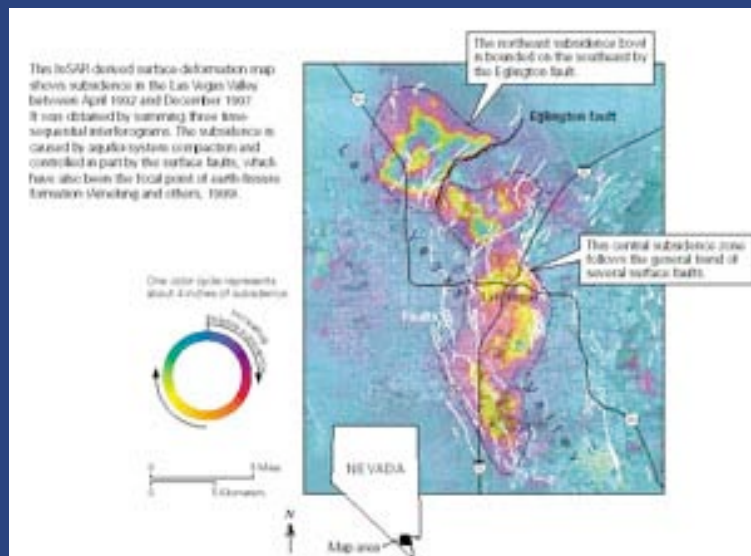
Ocean Observing, Geodesy and Measuring Topographic Change



Ben Brooks



Tripod-Lidar for high-resolution topography



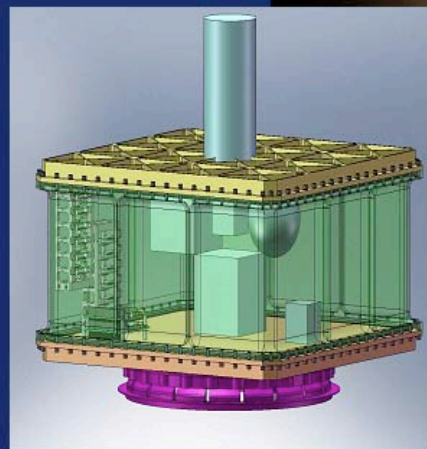
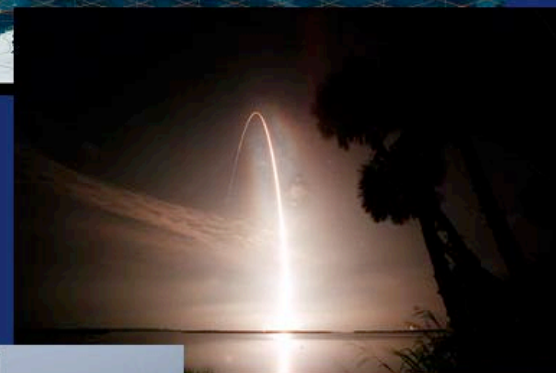
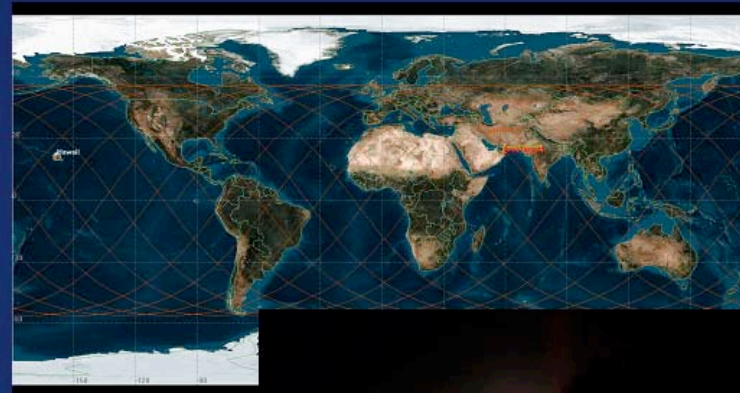
James Foster

Radar interferometry - deformation

Assessment of Coral Reef Health

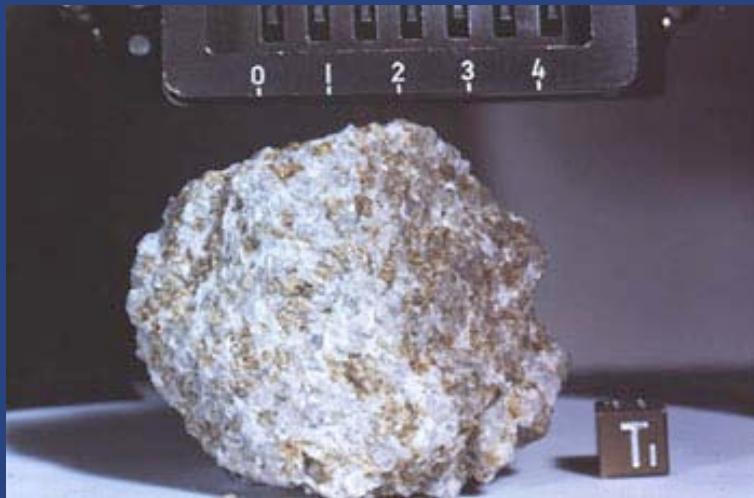
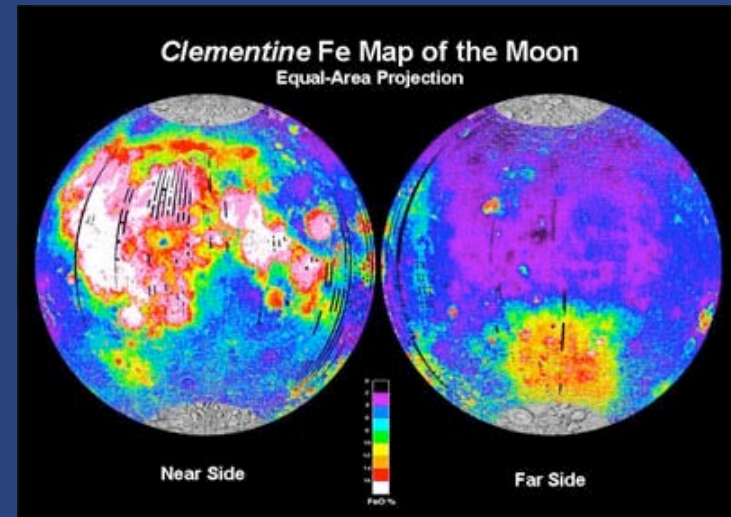
HI-CRESPO--Coral Reef Spectrophotometric Observatory

- ✦ Current status is a collaboration between HIGP, HSFL, HIMB and NASA Ames Research Center
- ✦ Fly a hyperspectral sensor on HSFL launch #2
- ✦ Funding targets:
 - ✦ Castle Foundation (HI-CRESPO proposal submitted August '08)
 - ✦ NASA SALMON Program (Standalone Missions of Opportunity)



Paul Lucey

HIGP's Next Research Initiative: Potential NASA Lunar Science Institute



- Origin of Moon
- Evolution of crust
- Late Heavy Bombardment



Jeff Taylor